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PHYLOGENETIC PLACEMENT OF TWO GENERA OF HADENINAE FROM SOUTHWEST RUSSIA (LEPIDOPTERA: NOCTUIDAE)

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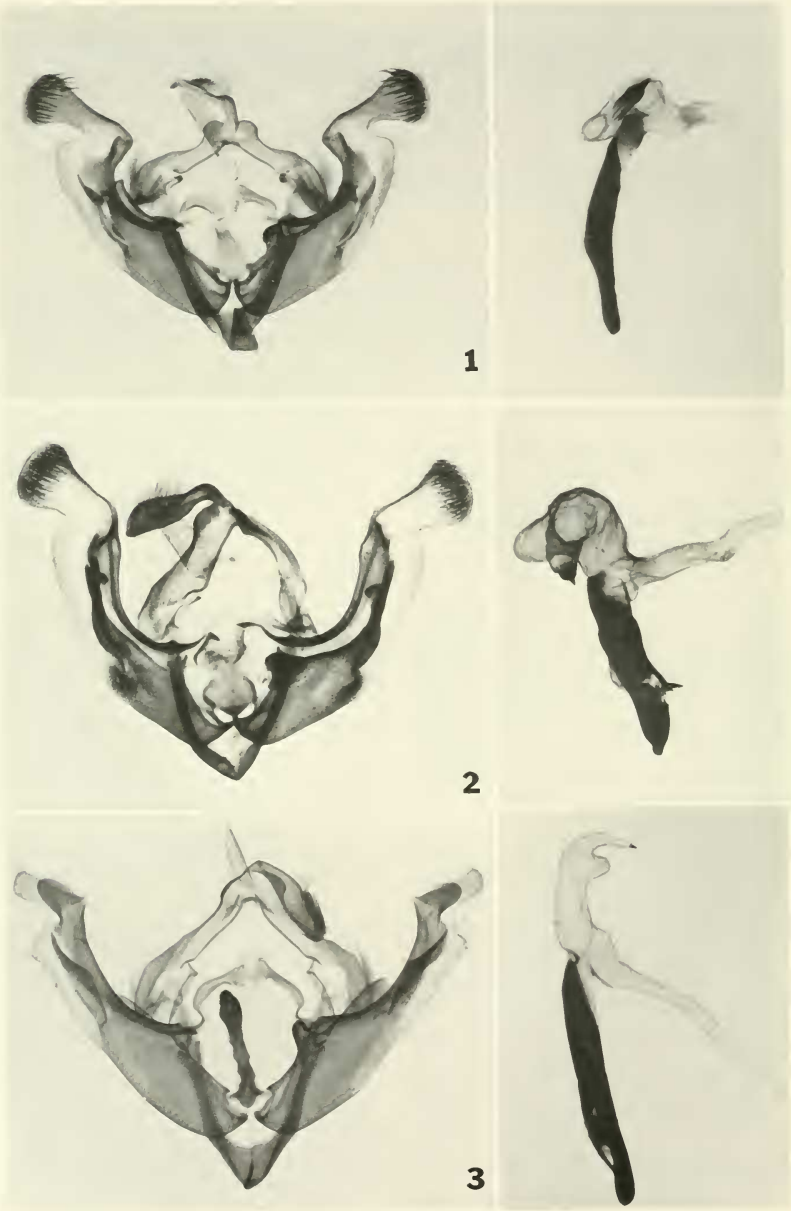
Abstract.—The types of two genera (Lepidoptera: Noctuidae) from southwest Russia have been examined and determined to be synonymous with existing European and American genera: *Epipsammia* Staudinger (1879), new synonym, is the junior subjective synonym of *Hecatera* Guenée (1852); *Namangana* Staudinger (1888) new synonym, is the junior subjective synonym of *Trichoclea* Grote, 1883. Morphological evidence for this synonymy is discussed. A lectotype is selected for *Namangana cretacea* Staudinger (1888). The following new combinations are made: *Trichoclea cretacea* (Staudinger), *Hecatera deserticola* (Staudinger), *Hecatera fixseni* (Christoph) and *Hadena boursini* (Wiltshire). *Epipsammia* and *Namangana* previously stood in the Acronictinae and are now formally transferred to the Hadeninae.

North American and European lepidopterists are generally not familiar with the noctuid genera *Epipsammia* Staudinger (1879) and *Namangana* Staudinger (1888). Both genera were described from arid deserts of southwest Russia. My recent studies on *Scotogramma* Hy. Edwards (1887) have caused me to review these genera to settle questions of synonymy.

Hampson (1909) was the first to apply *Namangana* to many of the Nearctic species. He did this without reference to the genitalia, although he apparently did have access to a correctly determined specimen of the type species. Hampson overlooked the hairy eyes and placed several Nearctic Acronictinae species in this genus. Barnes and Benjamin (1924, 1926) erected genera to accommodate many of the species then placed in *Namangana*. Several other species placed in *Namangana* by Hampson (e.g. *Protorthodes texana consors* Smith) are now recognized as Hadeninae.

Namangana, in reference to Nearctic species, appeared in our literature between 1909 and 1926, but was never cited in the familiar Nearctic checklists or catalogues. Hampson's application of the name to our species did not occur until after Smith's (1893) Catalogue and Dyar's (1903) List and by the next major checklist, that of McDunnough (1938), the included species had all been placed in other genera.

Barnes and Benjamin (1926) and Sukhareva (1973) both considered *Namangana* to be Hadeninae and not Acronictinae as it had been placed. Barnes and Benjamin (1926) considered *Namangana* to be similar to the Nearctic *Trichoclea* Grote (1883a) and *Scotogramma.* Sukhareva (1973) intimated *Namangana* might be considered a subgenus of the Palearctic *Hadula* Staudinger (1889), a related genus. *Namangana* is currently placed in the Acronictinae (Nye, 1975) even though it had been linked to the Hadeninae on at least two occasions (Barnes and Benjamin, 1926; Sukhareva, 1973). Staudinger as well as Hampson (1909) con-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sidered the genus to lack hairy eyes and placed it in the Acronictinae. Hair on the eyes is a controversial, not absolute, yet expedient character for differentiating Hadeninae from most other trifid noctuids. I examined the type of this genus and discovered it had long, although sparse, hairs on the compound eyes. Barnes and Benjamin (1926) had borrowed the cotypes of *Namangana cretacea* Staudinger (1888) and one of the included species, *N. accurata* Christoph (from Armenia) and assigned them to the Hadeninae (*accurata* was originally described as a *Mamestra* species in the Hadeninae). They did not examine the genitalia, designate a lectotype, illustrate the adult, or synonymize the genus, but clearly indicated the connection with *Scotogramma* and *Trichoclea*. They considered it distinct based on vestiture differences.

I borrowed the cotypes of *N. cretacea* from the Museum für Naturkunde der Humboldt Universität. Staudinger did not indicate a type specimen and I hereby designate the male, which I have illustrated (Figs. 2 and 5), as lectotype. It bears the following labels: Namangana Stgr. Cretacea Stgr.; Zool. Mus. Berlin; Origin.; McCabe slide 1157.

Namangana cretacea is extremely close to another type species, *Trichoclea decepta* Grote (1883a), as is apparent by the similarity in habitus (Figs. 4 and 5) and genitalia (Figs. 1 and 2). *Trichoclea decepta* is quite variable genitalically, and I selected as an example (Fig. 1) one which has greatly reduced harpal elements and consequently approaches *cretacea* in appearance. *Trichoclea decepta* adults are also variable and one of the adults depicted (Fig. 4) was chosen because it compares well with *cretacea*; Fig. 10 is another example at the other end of a cline. *Trichoclea florida* (Smith) (Fig. 11) is given as another example of a *Trichoclea* species. Notice also the similarity in habitus to the Nearctic *Scotogramma submarina* (Grote) (Fig. 12).

A vesica with a simple branch that terminates in a bulbed cornutus is characteristic of *Trichocosmia, Trichoclea, Scotogramma, Hadula, Cardepia* Hampson (1905) and related genera, but subject to convergence because of its simplicity. However, *cretacea* falls within the range of variation seen amongst the species of *Trichoclea* sensu stricto, hence *Trichoclea* and *Namangana*, **new synonym**, are congeners and *Trichoclea* has priority. *Trichoclea* is comprised of arid-land species that share a simple vesica with one branch near the base; a single, bulbed cornutus; generally have asymmetrical clavi (i.e. right clavus developed into a rounded protuberance); and a normal juxta (as apposed to a carinate juxta—see Fig. 3). This is a combination of features that are subject to convergence, but taken together establishes monophyly. The asymmetrical clavi, in particular, is a derived feature of considerable rarity and characteristic of *Trichoclea* and near relatives. Although all the species in these related genera share the single bulbed cornutus on the vesica, the shape and configuration varies, and in this, *cretacea* agrees very well with *decepta* (Figs. 1 and 2 vs. Fig. 3). The trend is toward greater asymmetry with eventual development of a battledore structure on the right valve and a heavily carinate juxta. They are very similar in habitus as is apparent from the figures (Figs. 4 and 5). *Trichoclea cretacea,* **new combination**, is distinct in lacking the heavy spines on the foretarsi typical of most *Tri-*

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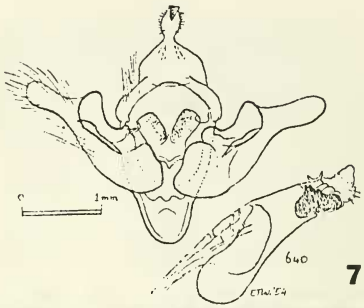
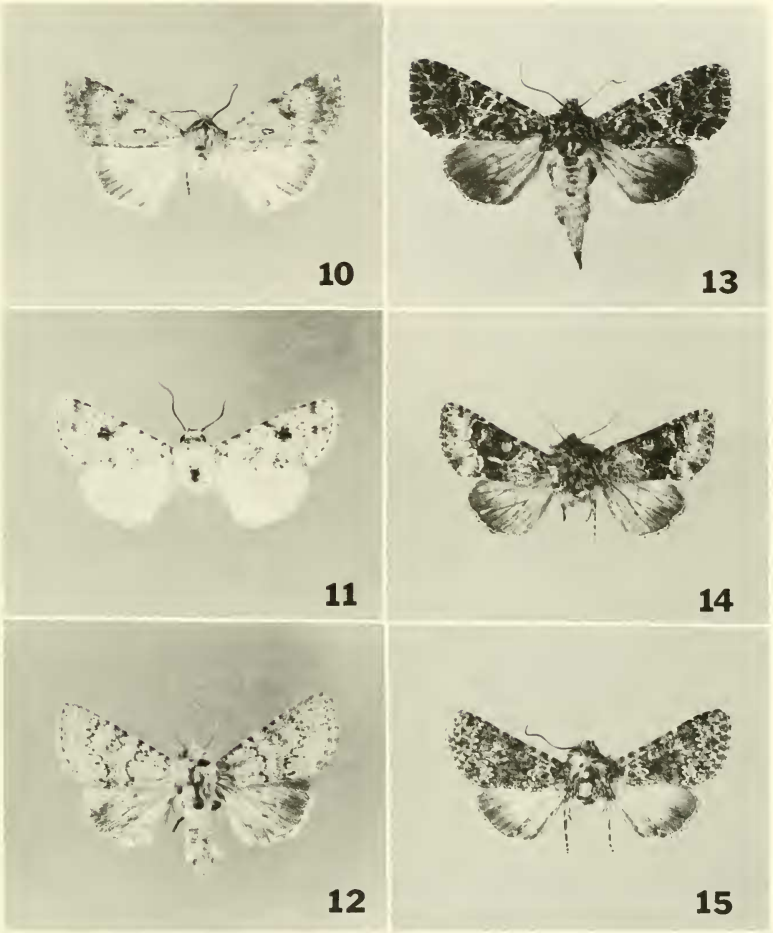
Figs. 1–3. 1, *Trichoclea decepta* valves & aedoeagus with vesica everted, McCabe slide no. 700, Miles City, Custer Co., Montana, USA. 2, *Namangana cretacea,* holotype, valves and aedoeagus with vesica everted, McCabe slide no. 1156, Namangan, USSR. 3, *Scotogramma submarina* valves and aedoeagus with vesica everted, McCabe slide no. 854, Stockton, Utah, USA.



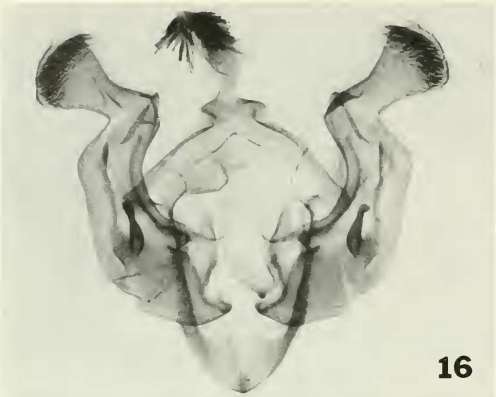
Figs. 4–9. 4, *Trichoclea decepta,* male, Lone Tree, Uinta County, Utah, USA. 5, *Namangana cretacea,* holotype male, Namangan, USSR. 6, *Epipsammia deserticola,* holotype male, Närun sandy region, USSR. 7, *Hadena boursini* (after Wiltshire, 1957) Shaqlawa, Iraq. 8, 9, *Hadena bicruris* valves and aedoeagus with vesica everted, McCabe slide 759, Europe.



Figs. 10–15. 10, *Trichoclea decepta,* male, Miles City, Custer County, Montana, USA. 11, *Trichoclea florida,* male, Great Exuma Island, Bahamas. 12, *Scotogramma submarina,* male, Montana, USA. 13, *Hadena bicruris,* female, Vaasa, Finland. 14, *Hecatera bicolorata,* male, Helsinki, Finland. 15, *Hecatera dysodea,* male, Barcelona, Spain.

choclea species. It differs from *Scotogramma* in that it lacks the carinate juxta (see Fig. 3, *Scotogramma submarina*) and the well developed flap overlapping the base of the cucullus.

Boursin considered *Namangana* as well as *Pseudathetis* Boursin to be synonymous with *Epipsammia* and stated that the new species similar to *E. deserticola* being described by Wiltshire was "an interesting modification of the same type of male genitalia" (Wiltshire, 1957). I disagree with



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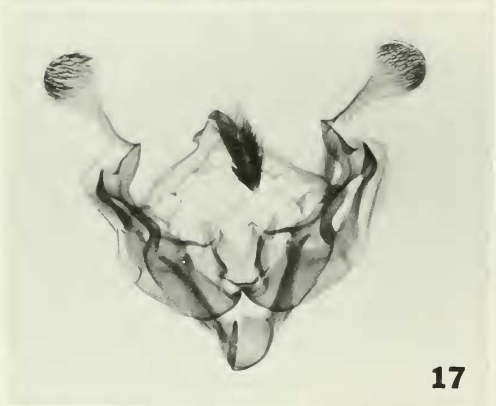

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Boursin's appraisal of *Namangana,* however, and think *Namangana* goes with *Trichoclea*; whereas *Epipsammia* Staudinger (1879) and *Hecatera* Guenée (1852) are congeneric and *Hecatera* has priority. *Hecatera dysodea* (Denis and Schiffermüller), the type species, is illustrated (Fig. 15 and 17). Pierce (1909) also depicted *dysodea,* but the valves (which are asymmetrical) were made to appear symmetrical as was often done during that period. *Epipsammia,* **new synonym**, has rarely been applied to species other than the type species, *E. deserticola* Staudinger (1879). It is a plain, buff-colored moth (Fig. 6) with the ordinary lines obscure. The male genitalia of *Hecatera deserticola,* **new combination**, are illustrated (Fig. 16). I borrowed the type from the Museum für Naturkunde der Humboldt Universität and it proved to have hairy eyes and typical *Hecatera* genitalia: a squat, right-angled cucullus; an unmodified juxta; an apical process off the sacculus; symmetrical development of the clavi; a reinforced costa; an uncus that is adorned with blunt-tipped fixed setae; and a vesica with a bulbed cornutus (lacking the distal patch of band-like cornuti that is typical of many, though not all, *Hadena*). Boursin (1960) later described two noctuids from Afghanistan as ?*Epipsammia constantialis* and ?*Epipsammia agrapha* under the Amphipyrinae. Boursin placed them after *Epipsammia fixseni* and *Epipsammia deserticola,* respectively. They were not illustrated. I have not examined these two species, but presumably they will also prove to be Hadeninae. Boursin synonymizes *Pseudathetis* Boursin with *Epipsammia* (Wiltshire, 1957), and I regard *Epipsammia* as a synonym of *Hecatera*; hence the sole included species, *Pseudathetis fixseni* Christoph, becomes *Hecatera fixseni* (Christoph), **new combination**. The species still needs to be examined to verify the relationship to *Hecatera,* and it may actually prove to belong in another genus, perhaps even *Hadena.*

Wiltshires' species, originally described as *Epipsammia boursini,* is, in my opinion, a *Hadena,* which means it should be known as *Hadena boursini* (Wiltshire) **new combination**. The male genitalia are illustrated in Wiltshire (1957), and I have shown his illustration (Fig. 7). The genotype of *Hadena, H. bicruris* (Fig. 13) has a spinulose juxta (Fig. 8) with lateral arms that are found in most of the species of *Hadena,* a derived feature not seen amongst related genera. An extension of the claval region apparently takes over the function of this juxtal modification in *Hecatera.* Wiltshire's (1957) species *boursini* (Fig. 7), has the spinulose juxta and I feel it falls within the limits of *Hadena.* Although I have illustrated only the type species of *Hadena* (Figs. 8, 9 and 13), *boursini* is genitalically more similar to other European *Hadena* species, most notably, *Hadena luteago* (Denis and Schiffermüller), which is illustrated in Pierce (1909) (as *barrettii* (Doubleday)).

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Figs. 16–18. 16, *Epipsammia deserticola,* holotype male, valves and aedoeagus, Boursin slide no. 364, Närun sandy region, USSR. 17, *Hecatera bicolorata,* male, valves and aedoeagus with vesica everted, McCabe slide 927, Helsinki, Finland. 18, *Hecatera dysodea,* male, valves and aedoeagus with vesica everted, Barcelona, Spain.

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